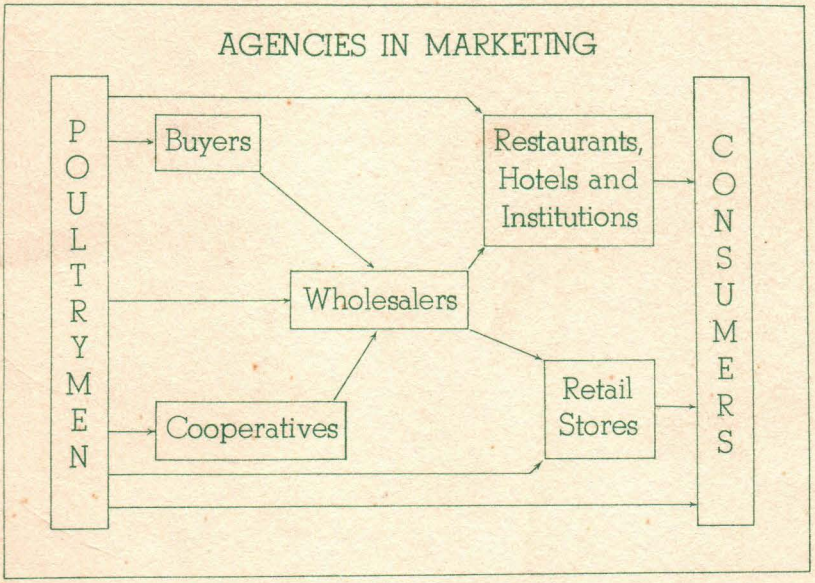
ASSEMBLY and DISTRIBUTION of EGGS in HONOLULU

Jules V. Powell and C. Richard Creek



Agricultural Economics Bulletin 2
University of Hawaii, College of Agriculture
in cooperation with
Bureau of Agricultural Economics
United States Department of Agriculture

September, 1951

ASSEMBLY and DISTRIBUTION of EGGS in HONOLULU

Jules V. Powell and C. Richard Creek

Agricultural Economics Bulletin 2
University of Hawaii, College of Agriculture
in cooperation with
Bureau of Agricultural Economics
United States Department of Agriculture

September, 1951

PREFACE

This is the first in a series of reports based on a study of the functions and agencies concerned in the marketing of eggs. Subsequent reports will cover (1) costs and margins in the marketing of eggs; (2) patterns of egg consumption; and (3) consumer reactions to price changes of eggs.

The authors are indebted to Ralph Elliott and Perry Philipp for their criticism and guidance in the preparation of the manuscript, to Stephen Doue for statistical calculations, to Ethel Nihei for editing the text and tables, and to the shippers and wholesalers of eggs who cooperated in making available the information on marketing.

This study was a cooperative undertaking of the Hawaii Agricultural Experiment Station, represented by Ralph Elliott, and the Bureau of Agricultural Economics, represented by Dr. D. B. DeLoach, under funds provided by the Research and Marketing Act of 1946. These funds were allotted under Project 353 of the Hawaii Agricultural Experiment Station.

SUMMARY

This report includes an analysis of the postwar civilian supply of eggs available in Honolulu, the seasonality of price, transportation facilities, marketing organizations and methods, and an analysis of the average quality of eggs sold at the retail level.

1. The civilian consumption of eggs in Honolulu amounted to 180 per capita in 1950, which was less than one half of the consumption on the Mainland of 394 eggs per capita. Consumption had been as low as 145 eggs per capita in other postwar years.

2. Almost half the eggs sold in Honolulu in 1950 were produced on Oahu, 39 percent were imported from the U.S. Mainland, and 14 percent were shipped in from the outer islands. Outer-island eggs were produced chiefly on the islands of Hawaii and Maui. Most of the mainland eggs originated in California and Washington.

3. Volume of island eggs varies in Honolulu because egg production in the Territory is uneven throughout the year. Imports of eggs from the Mainland also follow an uneven pattern. Fluctuations in supply are important because Honolulu is a "pocket market"; there are no near-by sources from which fresh eggs can be obtained readily in times of deficit supply, and there is no large market to which eggs can be sent when there is a surplus supply.

4. Prices for island and mainland eggs in Honolulu follow a similar seasonal pattern, but island eggs have sold at a premium of 10 to 40 cents a dozen in the immediate postwar years, 1946-49. In 1950, this spread ranged from 8 to 16 cents per dozen for the greater portion of the year.

5. Prices for island eggs are determined by supply of and demand for these eggs. Prices for mainland eggs in Honolulu are west coast wholesale prices plus transportation and handling charges. Since mainland eggs are usually purchased on order to supplement the supply of island eggs, the monthly variation in volume of mainland eggs has little effect on prices of either island or mainland eggs in Honolulu.

6. In 1949, 43 percent of the outer-island eggs marketed in Honolulu were shipped in unrefrigerated ships. Thirty-six percent were sent via interisland barge and 21 percent by air freight. Almost 85 percent of the mainland eggs sold in Honolulu were shipped via refrigerated ships. The remaining mainland eggs were sent via ventilated cargo space or by air freight. In 1950, under more normal conditions of transportation, only 3 percent of outer-island eggs were shipped via air freight and none were shipped from the Mainland by air.

7. There are approximately 27,000 cubic feet of egg-storage space in Honolulu. This space could be used to store about 337,500 dozen eggs, slightly less than the average number consumed each month. A negligible portion of island eggs is shell treated and stored during the spring season.

8. Most Oahu eggs are marketed directly from the farmers to retail stores or to consumers. Outer-island eggs are usually handled by wholesalers on consignment, but some eggs are shipped directly to retail stores and hotels. Mainland eggs are ordered to fill anticipated demand and are handled through wholesale channels in Honolulu.

9. Marketing channels for eggs in Honolulu are relatively simple and few in number. The marketing process becomes more complex as the distance of producers from Honolulu increases. Oahu eggs pass through few handlers between farmers and consumers. Outer-island eggs pass to a greater extent through wholesalers than do Oahu eggs, while mainland eggs are marketed through additional agencies for export.

10. The results of surveys made in June and November, 1950, and April, 1951, show that the quality of eggs sold in Honolulu is generally good, despite the fact that less than 10 percent of the Oahu eggs, 12 percent of the outer-island eggs, and 46 percent of the mainland eggs were displayed under refrigeration. Outer-island eggs were of better average quality than Oahu eggs, and mainland eggs were of slightly lower quality. Poor grading and candling at the farm and unsatisfactory methods of display in retail stores were the major factors affecting the quality of Oahu eggs.

CONTENTS

TABLES AND CHARTS

APPENDIX

THE ASSEMBLY AND DISTRIBUTION OF EGGS IN HONOLULU

Jules V. Powell[1] *and C. Richard Creek*[2]

INTRODUCTION

Eggs are an important source of income to Hawaiian farmers engaged in diversified agriculture.[3] Sales of eggs have amounted to about 10 percent of wholesale value of total diversified agricultural marketings in the postwar years (Table 1). A sharp decline in prices in 1950 reduced the relative value of eggs despite an increase in production of 15 percent over 1949.

Table 1. WHOLESALE VALUE OF TOTAL HAWAIIAN DIVERSIFIED AGRICULTURAL MARKETINGS AND VALUE OF EGGS PRODUCED, 1945-50*

Year	*Diversified agricultural marketings*	*Eggs produced*	*Eggs as percentage of total*
	$ 1,000	*$ 1,000*	*Percent*
1945	23,419	2,660	11.4
1946	24,427	2,027	8.3
1947	27,176	2,627	9.7
1948	30,385	2,953	9.7
1949	28,871	2,987	10.3
1950	28,657	2,442	8.5

*Source: Statistics of Diversified Agriculture in Hawaii (annual), 1945-50, Hawaii Univ. Agr. Ext. Serv.

Perhaps no other group of farmers engaged in agricultural production in Hawaii is quite as dependent on shipping from the Mainland as the poultrymen. A large percentage of hatching eggs and chicks are imported from the Mainland. All the feed is shipped from Mainland via surface freight.

---

[1]Formerly Assistant Agricultural Economist, HAES, and Cooperative Agent of the Bureau of Agricultural Economics.

[2]Associate Agricultural Economist, HAES, and Cooperative Agent of the Bureau of Agricultural Economics, U.S.D.A.

[3]The term "diversified agriculture," as used here, includes all crops and livestock grown in the Territory of Hawaii except sugar and pineapples, the specialized crops for export.

Postwar readjustments of the poultry industry have been complicated by three maritime strikes since 1945. During strike periods, some farmers who had not built up reserves of feed were forced to liquidate their laying flocks because of inability to secure feed. Others sold laying hens because poultry meat prices were frequently high in relation to egg prices. Even during strike-free periods, marginal farmers sold laying stock very rapidly if poultry meat prices were favorable to them or if the egg-feed ratio was unfavorable.

The difficulty and expense of obtaining suitable land has had a restricting influence on the poultry industry, particularly on Oahu. Of the 208 commercial poultrymen on this island in 1949, i.e., those having over 100 layers, approximately 150 were within the city limits of Honolulu. Recently, rezoning has reduced the areas in Honolulu in which poultry raising is allowed. A few poultry farmers may be forced to move from residential zones on 30-day notice. It is becoming apparent that new poultry farms will have to be built farther from Honolulu, and poultry flocks will have to be larger to produce eggs profitably.

Changes in the pattern of egg production on Oahu will not be made quickly. Inhibiting factors include: (1) high cost of feed and flock replacement; (2) susceptibility of the poultry industry to disrupted transportation; (3) lack of suitable land at agricultural prices; and (4) prospects of lower profits. These inhibiting factors also affect the other areas in the Territory except that the outer islands are less densely populated and land is more easily obtainable. On the other hand, the marketing of eggs becomes more costly with increased distance from the market.

THE PROBLEM

The marketing problems of the Hawaiian poultry industry are attributable to a combination of several factors, including: (1) lack of locally produced feed; (2) insufficient egg production to satisfy local demand; (3) irregular supply; (4) inadequate storage facilities; (5) unfavorable retailing practices; and (6) the effect of a warm climate on the quality of eggs.

All of the poultry feed is shipped into the Territory from the U.S. Mainland. As a result, feed prices are considerably higher than on the Mainland. Hawaiian poultrymen pay at least 82 cents more per 100-pound bag of feed than do west-coast

poultrymen. Other factors contributing to high production costs are: (1) the high cost of land suitable for poultry raising and (2) the practice of importing a large percentage of flock replacement from the Mainland.

In 1950, about 40 percent of the eggs consumed in Honolulu were imported from the U.S. Mainland. Wholesale prices for mainland eggs in Honolulu were generally 15 to 20 cents per dozen higher than west-coast wholesale prices in the postwar period (1946-50). Island eggs commanded a premium over mainland eggs, and the amount of the premium varied from a few cents to over 40 cents per dozen during the 5-year postwar period.

The total supply of eggs in Honolulu is variable. Island production is heavy in the spring and the surplus from the outer islands is sent to Honolulu. Imports of mainland eggs are reduced during this period and wholesalers' prices for island eggs decline to their lowest level. In the fall, island eggs are in short supply, and imports of mainland eggs are increased. Increased supply of mainland eggs does not alleviate a deficit of island eggs, however, since mainland eggs are shell protected[4] and are not readily accepted by many Honolulu consumers, who believe that imports are cold-storage eggs of uncertain quality.

The variability of egg supplies in Honolulu is accentuated by the inadequacy of storage facilities for eggs. During the spring season, a negligible amount of island eggs can be stored for later in the year when production is low and prices are higher. Less than a 1-month supply of mainland eggs can be stored in Honolulu, and it is quickly depleted when transportation from the Mainland is disrupted.

The quality of island eggs bought by Honolulu consumers is affected by the way eggs are displayed in retail stores. Oahu and outer-island eggs are seldom displayed in refrigerated boxes. Retailers say that, when eggs are kept under refrigeration, consumers think they are storage eggs and less desirable. Mainland eggs are usually kept under refrigeration.

The climate of Honolulu is warm throughout the year. This has considerable effect on the rate of quality deterioration of eggs both at the farm level and within the marketing channels. Most of the island eggs are not refrigerated from the time they are laid until they reach the consumer, and, if the time elapsed is more than a few days, the egg quality may be decreased one or two grades.

---

[4]This process consists of dipping the eggs for a few seconds in a bath of colorless, odorless, and tasteless mineral oil. The oil closes the pores in the shell and decreases the evaporation of water from the egg.

PURPOSE OF STUDY AND METHOD USED

This study is the first of a series designed to determine egg-marketing costs and methods and certain factors affecting the demand for eggs in Honolulu. The scope of this study was limited to a determination of available egg supply and the marketing methods used by Hawaiian farmers, wholesalers, and retailers in supplying the Honolulu market.

The following factors affecting the marketing of eggs in Honolulu were analyzed:

1. Volume and seasonality of egg production in the Territory.

2. Volume of eggs imported from the U.S. Mainland and foreign countries and the total supply available for civilian marketing agencies operating in the Territory.

3. General marketing practices followed by farmers with respect to handling and marketing.

4. Buying and selling practices of marketing agencies in Honolulu.

5. Functions of various Honolulu and off-island farmer organizations in marketing.

6. The average quality of eggs sold at retail.

Data concerning the volume of eggs shipped to Honolulu from the outer islands, U.S. Mainland, and foreign countries were tabulated by months. Estimates of the volume and value of eggs produced in the Territory by island of origin are from "Statistics of Diversified Agriculture," published by the Department of Agricultural Economics, University of Hawaii Agricultural Extension Service.

The managers of nine wholesale establishments handling eggs and two poultrymen's associations on Oahu were interviewed concerning their individual sources of supply, volume of eggs handled, handling practices, wholesaling and jobbing functions, variations in grade and size of eggs, and storage facilities and practices.

Oahu poultry farms were visited to study the methods used by farmers in marketing eggs. Farmers were questioned concerning the size of their enterprise, production practices and costs, and marketing methods and costs. Farmers and marketing groups on the islands of Hawaii and Maui were also interviewed to determine the marketing practices, costs, and returns to farmers marketing eggs in Honolulu.

Records of monthly inspections on the quality of eggs sold in Honolulu retail stores were obtained from the Division of Marketing, Territorial Board of Agriculture and Forestry. These data were supplemented with a survey of 36 retail stores made in June and November, 1950, by inspectors of the Division cooperating with the Department of Agricultural Economics.

For the purposes of this survey, the city of Honolulu was divided into six districts, and in each district two large, two medium, and two small stores were selected from a list of retail grocery stores provided by the Oahu Retail Food Dealers' Association. It was decided to candle 100 eggs of each group of island and mainland eggs offered for sale in each store. For example, if a store sold large Grade A mainland eggs, large Grade A and medium Grade A island eggs, 300 eggs would be inspected. Alternate stores were chosen in each district to be used when the store to be inspected did not have 100 eggs in any one group. A total of 8,000 eggs was inspected throughout the city.

THE MARKET

The largest consuming area in the Territory is the city of Honolulu, located on the southern shores of Oahu. Honolulu stretches for approximately 15 miles along a rather narrow coastal plain, with spurs running up into the valleys and onto the overlooking heights. The valleys are relatively isolated from each other, making distribution inefficient and costly.

The civilian population of the city of Honolulu was approximately 232,200 on July 1, 1950, as estimated by the Territorial Department of Health from preliminary U.S. Census figures for 1950. Adjustments were made for members of the Armed Forces, for migration, and for births and deaths. The civilian population of urban and rural Honolulu (island of Oahu) was approximately 320,700 in mid-1950, which was almost 70 percent of the total civilian population of the Territory (467,700). By racial groups, the territorial population was about 40 percent Japanese, 19 percent Hawaiian and part-Hawaiian, 17 percent Caucasian, 13 percent Filipino, 6 percent Chinese, and 5 percent other groups. The Oriental population would comprise more than one half and the Caucasian and Hawaiian populations each about one fifth of the residents of Honolulu. Caucasian tourists would be about 0.5 percent of the population of urban Honolulu.

In 1950, the annual consumption of eggs in rural and urban Honolulu was 180 per capita compared to 162 in 1949 and 145 in

earlier years (Table A, Appendix). This is less than one half the consumption rate on the Mainland of 390 eggs per capita in 1950 and an average of 376 for the previous 6 years. High prices, uncertain quality, racial dietary habits, and the warm climate have been advanced as reasons for the low rate of consumption in the Territory.

The climate of Honolulu varies from district to district, being generally cooler and wetter near the mountains but drier and warmer near the ocean. The average annual temperature in downtown Honolulu in 1949 was 74.2° F., ranging from a low of 61° F. in January to a high of 84° F. in September. The lowest recorded temperature on record was 56° F. in February, 1909, and the highest was 88° F. in September, 1941. The relative humidity is usually high. Losses of perishable commodities from spoilage and quality deterioration are greater in Honolulu than in most cities of comparable size on the Mainland because of the uniformly warm climate and inadequate cold-storage facilities.

SUPPLY

Civilian supplies of eggs for the Honolulu market are from three major sources: (1) Oahu, (2) the outer islands, and (3) the U.S. Mainland. Before World War II, some eggs were imported from Japan, and, since 1945, eggs have been imported from Canada when transportation from the U.S. Mainland was interrupted. A few eggs in clay or ashes have been imported from China, but these have not been competitive with fresh eggs.

Until 1948, over 50 percent of the eggs consumed in Honolulu were shipped from the U.S. Mainland. Egg production on Oahu has increased since 1947, and a postwar record high of 2,282,000 dozen was produced in 1950 (Table B, Appendix). Assuming that the total estimated Oahu production from commercial farms entered the Honolulu marketing channels, local production in 1950 made up 47 percent of the total supply. Mainland eggs contributed 39 percent, while the outer islands supplied 14 percent.

Supply from the Territory

Almost all of the island eggs sold in Honolulu are produced on the islands of Oahu, Hawaii, and Maui. Oahu eggs are produced near Honolulu primarily for that market, but eggs that are sent to Honolulu from Hawaii and Maui represent the surplus

production of those islands. The volume of Oahu eggs sold in the city of Honolulu is not recorded separately from Oahu as a whole, but, in 1950, shippers on Hawaii sent 456,000 dozen eggs to Honolulu, and shippers on Maui sent 191,600 dozen. The poultry farms on the outer islands are located near the urban areas. On Hawaii, most of the eggs are produced near the city of Hilo, which has a population of approximately 27,000 people. Hilo is also the center of the flower industry in the Territory, and poultry and flower growing are complementary enterprises on many farms. Most of the Maui eggs are produced near the towns of Wailuku and Kahului, which have a combined population of approximately 14,000.

The volume of eggs produced in 1950 on the islands supplying Honolulu is shown in Table C of the Appendix, with comparisons for 1947. The number of poultry farms in the Territory decreased 37 percent from 1947 to 1950, but the average number of layers increased 5 percent, and total egg production increased 36 percent. Better methods of production have enabled farmers to take care of more layers and to increase the egg production per bird.

Supplies from the Mainland

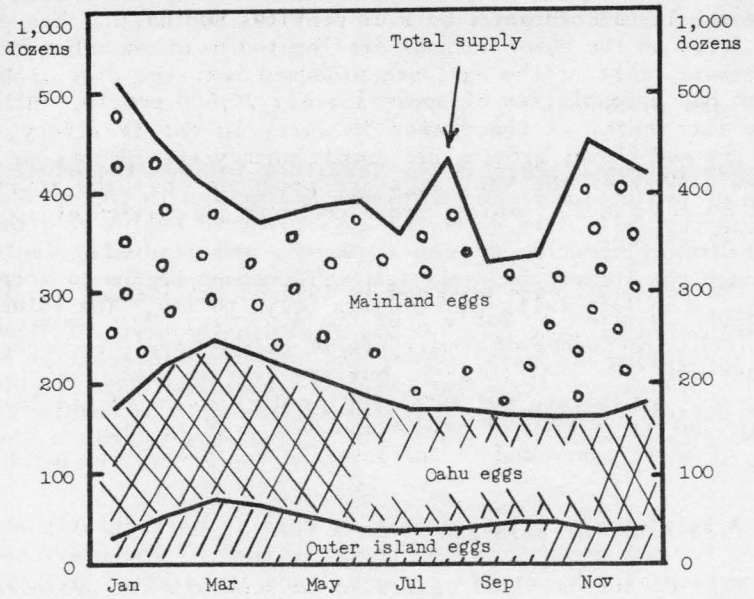
Most of the mainland eggs sold in Honolulu are produced in California and Washington, but some midwestern eggs are sent to Honolulu by west-coast shippers. Most of the midwestern eggs are handled by branch offices of mainland wholesale firms which have widespread assembling subsidiaries. Independent wholesalers in Honolulu purchase directly from California and Washington cooperative associations.

Shipments in Honolulu are received from west-coast ports at least twice each week. Ships arrive every week from both San Francisco and Los Angeles and twice a month from Portland and Seattle.

The volume of mainland eggs shipped into Honolulu is influenced by the number of tourists, troop movements, and the beginning of public school sessions. More eggs are imported from the Mainland during the peak tourist months and when an above-average number of families of Army and Navy personnel are on the Islands. In the immediate postwar period (1946-49), August was one of the peak months of imports of mainland eggs as wholesalers anticipated an increased demand for eggs by school-lunch programs in September.

In Chart 1, the seasonality of egg supply in Honolulu is shown for the postwar period, 1946-49. Some distortion in the

Chart I. AVERAGE MONTHLY SUPPLY OF EGGS, BY SOURCE, IN HONOLULU COUNTY, 1946-49.



pattern might arise in the figures for September, October, and November because total supplies are strongly influenced by unloads from the Mainland, and, in 3 of the 4 years used in the averages, transportation from the U.S. Mainland was disrupted in those months. Egg production on Oahu and on the outer islands was affected by the disrupted transportation of feed and supplies.

Seasonal supply of eggs in 1950 from three sources is shown in Chart A, of the Appendix. For this year of more normal transportation and production, the total supply of eggs was greatest in the months of February, May, and October. In February, an increase in territorial production of about 900 cases over January was responsible for the greater supply. In May and October of 1950, imports from the Mainland were 50 percent greater than for either the preceding or the following months, which indicated over-ordering by wholesalers. Minimum imports from the Mainland occurred in April, June, and December of 1950, as a reflection of previous supply and price conditions.

Prices of island eggs were low from March through June while in December the prices of mainland eggs reached a seasonal high

point. The narrow spread in price between mainland and island eggs at these periods tended to restrict import of eggs. The sharp decreases in volume of imports in June and November, 1950, were the result of over-buying in previous months.

Analysis of Supply

Production of eggs in the Territory follows the usual pattern of production on the Mainland, being high in the spring and low in the fall. The volume of eggs produced begins to increase in February, reaches a peak in March, and gradually declines through the summer and early fall. Production begins to increase slightly in late fall, when pullets begin to lay. The volume of in-shipments of eggs from the Mainland usually decreases throughout the spring and early summer and begins to increase in early fall. The demand for island eggs and mainland eggs differs to some degree. An increase or decrease in supply of mainland eggs alleviates a deficit or surplus of island eggs to only a limited extent.

A surplus or deficit supply of eggs is particularly emphasized because Honolulu is a "pocket market." The heavy spring production of Oahu and the outer islands is marketed in Honolulu. There are no other large markets to which surplus eggs can be sent, and no systematic effort has been made to store eggs in Honolulu. Although the territorial production has never been large enough to satisfy the total demand, enough island eggs are on the market in the spring to force the price down close to the level for mainland eggs.

During the fall period of short supply, Oahu eggs are scarce, and the surplus production of the outer islands available for shipment to Honolulu is low. Fresh eggs are not available from other near-by sources.

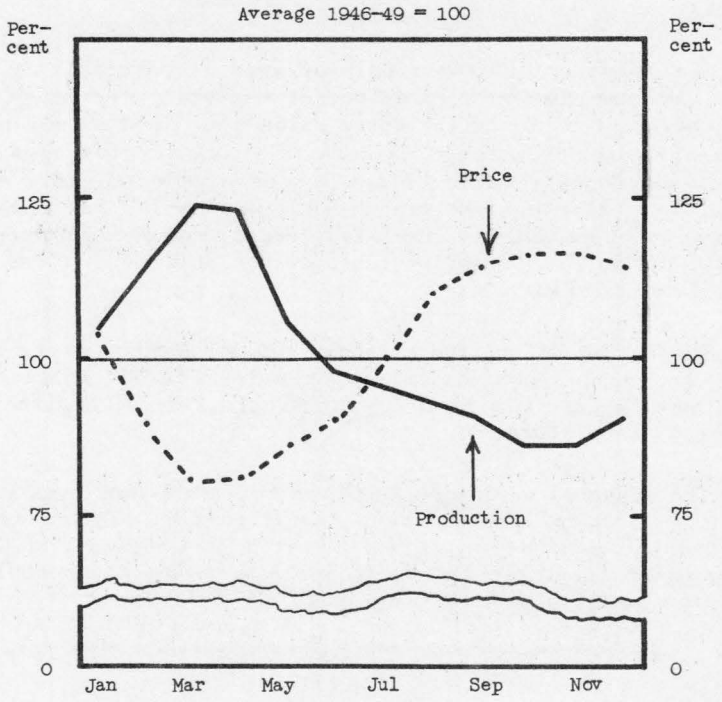
The seasonal variation in production of island eggs was less in 1950 than for the previous 4-year period. The monthly variation in production is illustrated in Chart 2 and Chart B (Appendix) for these two periods. A more uniform monthly production in 1950 was the result of normal supply of feed and larger flocks on a smaller number of farms (Table C, Appendix). Under improved conditions of production in 1950, the rate of lay increased over 1949 by six eggs per bird.

PRICES

Prices for both island and mainland eggs sold in Honolulu follow the same general pattern--lowest in the spring and highest in the fall. Prices for island eggs are determined by available supply and effective demand. Since the demand for these eggs remains relatively uniform, prices vary inversely with the quantity of eggs produced. In Chart 2, the supply-price relationship is shown for island eggs in the 4 immediate postwar years (1946-49).

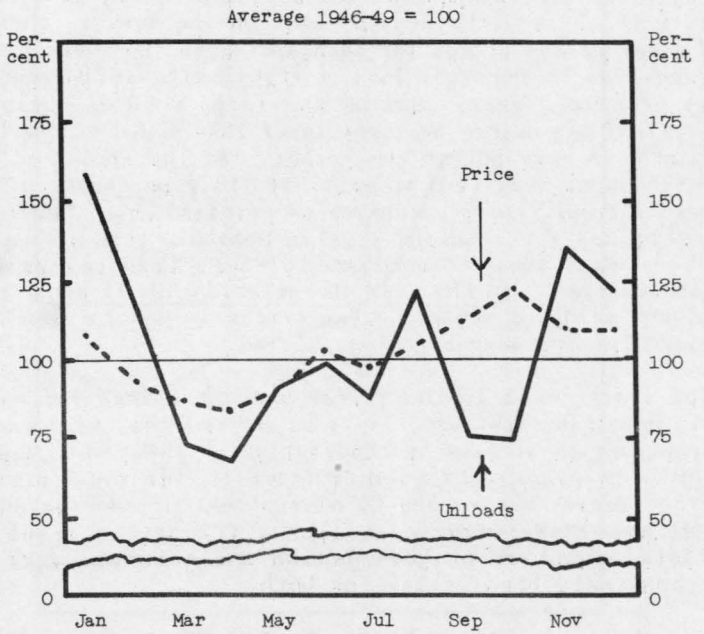
In 1950, a similar relationship between volume and price occurred as shown in Chart B, Appendix.

Chart 2. AVERAGE MONTHLY PRODUCTION OF OAHU EGGS AND AVERAGE WHOLESALE PRICES FOR LARGE GRADE A OAHU EGGS IN HONOLULU, 1946-49.



Between 30 and 45 percent of the price paid by Honolulu consumers for mainland eggs in 1950 covered transportation and marketing charges between mainland producers and Honolulu consumers. Wholesale prices of mainland eggs in Honolulu are west-coast wholesale prices plus transportation and marketing costs. There was little apparent correlation between quantities of and prices for mainland eggs in Honolulu. In Chart 3, the supply-price relationship is shown for mainland eggs sold in Honolulu in the 4 postwar years. The quantity fluctuated greatly by months because of unsettled conditions of supply; especially important were interruptions in transportation in 3 of these years. In 1950, the quantity of imported eggs fluctuated less from the annual average (Chart C, Appendix) than in previous years. Average prices followed a similar pattern over these postwar years, with the exception of a sharp rise in prices of mainland eggs in December, 1950.

Chart 3. AVERAGE MONTHLY UNLOADS OF MAINLAND EGGS AND AVERAGE WHOLESALE PRICES FOR LARGE GRADE A MAINLAND EGGS IN HONOLULU, 1946-49.



Prices of island eggs command a premium over those of mainland eggs because local eggs are more desirable to many Honolulu consumers. The amount of premium in the postwar period (1946-1949) varied with the supply of island and mainland eggs available; it was as little as 14 cents in the spring months and over 40 cents in the fall months. The smallest spread between island and mainland egg prices occurred in March, 1948, when it was 14 cents. The largest spread was 45 cents in December, 1947. In Tables D-1, D-2, and D-3 (Appendix), the monthly average wholesale prices are shown for large Grade A island and mainland eggs in Honolulu and large Grade A mainland eggs in San Francisco for 1946 through 1950.

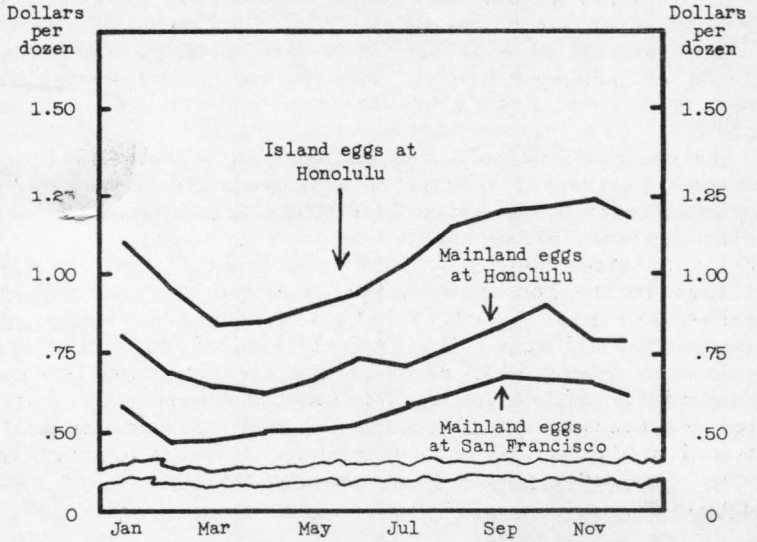
Early in 1950, the premium in price of Grade A island eggs over mainland eggs was 25 cents per dozen, but in March the difference was only 8 cents, ranging upward to 16 cents in September. In December, the premium narrowed to 4 cents as shown in Tables D-1 and D-2 (Appendix). Early in 1951, the spread was 5 to 20 cents per dozen, based on weekly quotations.

Prices for island eggs will not fall below prices for mainland eggs because island eggs are seldom produced in sufficient quantity to satisfy the demand, and, on the market, these eggs would clear at the prices for mainland eggs. However, prices of mainland eggs in Honolulu have a stabilizing influence on the prices of island eggs. During the fall, when egg prices are high, island egg prices are kept lower than would be the case if mainland eggs were not on the market. As the spread in prices increases, consumers tend to restrict their purchases of island eggs and increase their purchases of mainland eggs. During this season, prices for mainland eggs in Honolulu tend to be higher than the usual amount required to cover transportation and handling charges. In Chart 4, the relationship is shown between island and mainland wholesale egg prices in Honolulu and in San Francisco for the 4-year postwar period.

The sharp rises in the 4-year average prices for mainland eggs in Honolulu, that occur in June and October, were caused by interruptions in surface transportation in 1949, when eggs were brought in by plane and "splinter fleets." Other distortions in the price series are caused by disruptions of shorter duration in 1946 and 1948. Transportation difficulties resulted in restricted supplies of both island and mainland eggs, with correspondingly high prices for both.

The wholesale prices by months for these eggs showed the same general trend in 1950 (Chart D, Appendix) as in 1946-49 but at a lower level. Island eggs were 10 to 35 cents per dozen cheaper than in the 4 postwar years, while mainland eggs were

Chart 4. AVERAGE MONTHLY WHOLESALE PRICES FOR LARGE GRADE A EGGS IN HONOLULU AND SAN FRANCISCO, 1946-49.



8 to 15 cents lower in price except in December, 1950, when the price of these eggs rose sharply in the Honolulu wholesale market. Imports were below the average in December, in contrast to above-average unloads of mainland eggs during this month in previous years.

Supply-Price Relationship in 1950

In 1950, the transportation situation between Honolulu and the Mainland and between the Islands was the nearest to normal conditions of any postwar year. The population of Honolulu had become fairly stabilized, with less influx and departure of civilian personnel. The purchasing power of consumers had leveled off after postwar fluctuations, and the conditions for production of eggs in the Territory were more favorable.

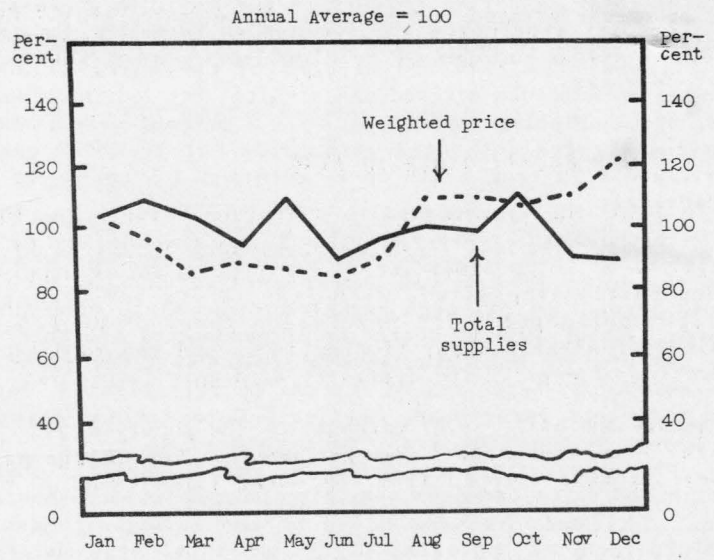
Almost one half, or 47 percent, of the supply of eggs in the greater Honolulu market[5] was produced on the island of Oahu, 14 percent were shipped from the outer islands and 39 percent

[5]Rural and urban Honolulu, or Honolulu County.

were imported from the Mainland via steamers. Total supply of island eggs was greatest in March, decreased somewhat in April, remained fairly stable through September, and declined to the low point of the year in November (Chart A, Appendix). Purchases of mainland eggs were erratic in volume during 1950, with peak unloads in January-February, in May, and in October (Chart C, Appendix).

The wholesale price for island eggs in Honolulu followed the customary pattern of inverse relationship with volume of local supplies (Chart B, Appendix), but the price of mainland eggs by months did not follow the inverse relationship with quantity until the latter months of 1950. In Chart 5, the quantity of all eggs in the Honolulu market is shown as a percentage of average receipts in relation to the weighted average price (relative) of all eggs. The general trend of this chart follows the inverse relationship of price and quantity usually found in a competitive market for agricultural products. This supply-price relationship in 1950 suggests that more uniform or less seasonal production of island eggs would result in more stable prices, more orderly marketing, and greater net returns annually to poultrymen.

Chart 5. MONTHLY SUPPLIES OF ALL EGGS AND WEIGHTED WHOLESALE PRICES FOR GRADE A ISLAND AND MAINLAND EGGS IN HONOLULU, 1950.



TRANSPORTATION

Eggs are transported to Honolulu by truck, ship, barge, and plane. Those arriving by ship and barge may be either refrigerated or unrefrigerated, depending upon the origin of eggs and the season of the year. Eggs shipped by truck and plane are not refrigerated.

All Oahu eggs are sold on the island, and most of them enter the trade channels of the city of Honolulu. In most cases, each farmer brings his eggs to market in his own truck. Eggs are packed in cartons, and 30 cartons are packed in a standard egg case. Trucking costs per dozen vary with each farmer, depending on the quantity he markets each time, the distance from the farm to the market outlet, and the number of stops he makes in disposing of the eggs. The larger poultry farms supply commissaries, hospitals, institutions, hotels, restaurants, and retail stores. The smaller farmers usually sell their eggs directly to small retailers and to consumers on routes or at the farm. During the spring, farmers may require all day to sell them, whereas, in a scarce season, they may be able to sell their total supply at the farm. There is one truck route for assembly of eggs that is used by a group of farmers who market their eggs cooperatively.

Eggs from the outer islands arrive via air freight, refrigerated or unrefrigerated barge, and unrefrigerated ship. Eggs are usually shipped in wooden cases of 30 dozens packed with flats and fillers. In 1949, 21 percent of the outer-island eggs marketed in Honolulu arrived via air freight, but in 1950, under more normal shipping conditions, only 3 percent were transported by air. Air-freight rates were $1.25 per 30-dozen case from Hawaii and $.75 from Maui, or 4 cents and 2.5 cents per dozen, respectively.

Approximately 232,000 dozen eggs were shipped to Honolulu from the outer islands via unrefrigerated ship in 1949, which was 43 percent of all eggs marketed in Honolulu from the outer islands. About 195,000 dozen, or 36 percent of the outer-island eggs marketed in Honolulu, were shipped via interisland barge. Eggs shipped by barge may or may not be refrigerated, depending upon the other cargo being carried. Outer-island shippers do not pay more than the deck-space rate of 40 to 45 cents per case, or approximately 1.4 cents per dozen. Freight charges on interisland ships are approximately the same as deck-space barge rates. The trip between ports on the island of Hawaii and Honolulu requires approximately 36 hours by barge and 15 hours by ship.

About 85 percent of the eggs unloaded in Honolulu from the Mainland were shipped via refrigerated freight. In 1949, approximately 1,854,000 dozen arrived by this means, mostly in wooden cases of 30 dozen packed with flats and fillers. Average freight charges (including taxes and tolls) ranged from $1.42 per case for small eggs to $1.62 per case for large eggs. Other shipments to Honolulu from the Mainland were made via ventilated cargo space or by air freight. Ventilated cargo space was often used during the winter, when temperatures are cooler. The freight rate for ventilated cargo space was charged at the rate of $13.60 per ton, exclusive of taxes and tolls. Transportation tax was 3 percent of the freight charges. Toll charges varied with the port from which eggs were sent and the pier at which they were unloaded in Honolulu. San Francisco toll charges were 50 cents per ton, charged in multiples of 10; Los Angeles charge was 25 cents per ton, figured to the penny; and northwest ports charged 36 cents per ton, in multiples of 9. Territorial toll charges were usually 40 cents per ton, charged in multiples of 10.

The quantity of eggs shipped by air from the Mainland was negligible, except during periods when normal surface transportation was disrupted.

Table 2. NUMBER OF SHELL EGGS RECEIVED AT HONOLULU BY ORIGIN AND TYPES OF TRANSPORTATION, 1949.

Origin	*Refrigerated ship*		*Unrefrigerated ship*		*Barge*		*Air freight*		*Total*
	1,000 doz.	*Percent**	*1,000 doz.*	*Percent**	*1,000 doz.*	*Percent**	*1,000 doz.*	*Percent**	*1,000 doz.*
Mainland	1,854	84	327	15	–	–	38	1	2,219
Hawaii	–	–	225	64	15	4	113	32	353
Maui	–	–	7	4	180	95	2	1	189
Foreign	127	100	–	–	–	–	–	–	127
Total	1,981	69	559	19	195	7	153	5	2,888

*Percentage of total receipts from origin by type of transportation.

STORAGE

Approximately 27,000 cubic feet of storage space in Honolulu is suitable for eggs; most of it is owned by wholesalers. This space could handle adequately about 337,500 dozen eggs, slightly less than the average number consumed per month, but more than the average monthly unloads from the Mainland and outer islands. Approximately 80 percent of this storage space belongs to three wholesalers in Honolulu. The remaining space is distributed among five wholesalers.

Of the storage space that is suitable for eggs in Honolulu, only part of it would be readily available. Some of the wholesalers are representatives of larger mainland corporations and must store meat, butter, cheese, and other perishable commodities. The relative importance of eggs in each wholesalers' business determines the space allotted to eggs. The trend since World War II has been toward fewer wholesalers handling eggs. At the present time, three wholesalers handle almost 70 percent of the mainland and outer island eggs sold in Honolulu.

Oahu eggs do not draw upon the available storage space, as less than 10 Oahu farmers sell to wholesalers on a year-round basis. Many farmers attempt to sell to wholesalers during the spring season, but wholesalers are reluctant to buy during this period because of limited storage facilities and because they need a dependable supply of eggs throughout the year to satisfy the retail trade.

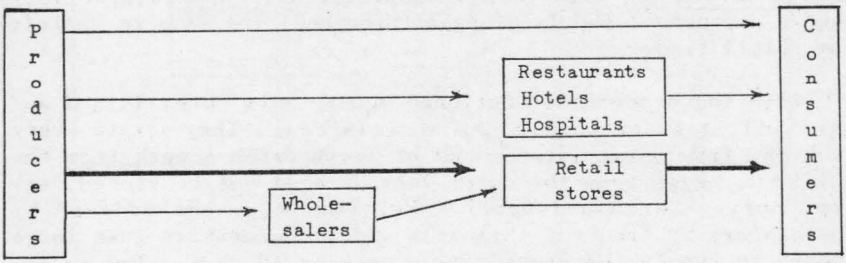
With the exceptions mentioned above, only outer-island and mainland eggs are handled by wholesalers. They arrive every week day from outer islands and at least twice a week from the Mainland. Eggs from the outer islands need not be stored, except during March and April. Mainland eggs are ordered by wholesalers at frequent intervals and in quantities just large enough to supply the demand for a week or 10 days. The inadequacy of storage facilities in Honolulu is apparent only during periods of peak island egg production and when transportation from the Mainland is disrupted.

MARKETING

Eggs marketed in Honolulu may reach the consumer the day after they are laid, or they may be in the trade channels several weeks. The marketing of Oahu eggs is usually directly

to retail stores and consumers, but mainland eggs pass through many marketing agencies before they reach retail stores in Honolulu. The gross return to farmers for a dozen eggs varies inversely with the number of marketing agencies through which the eggs must pass from the farmer to the consumer and varies directly with the marketing services performed by the farmer. Hence, Oahu farmers receive a larger percentage of the consumer's dollar than do outer-island or mainland farmers. Oahu farmers receive 85 to 100 percent of the retail price consumers pay, while mainland farmers may receive less than 50 percent. However, most Oahu poultrymen candle and grade their own eggs and pack them in 1-dozen cartons which are usually labeled with the name and address of their poultry farm. These producers also deliver eggs to retail stores, restaurants, and to many consumers (Chart 6). Eggs are sold as Grade A, but may include a high percentage of Grade AA eggs. Most Oahu eggs in retail stores are large or medium, depending upon the season. Small eggs usually are consumed on the farm or sold to buyers who call for them. The disposal of small eggs and peewees[6] is a marketing problem unless the selling price is lowered considerably below that of the next larger size.

Chart 6. CHANNELS OF DISTRIBUTION FOR EGGS FROM OAHU POULTRYMEN TO HONOLULU CONSUMERS.



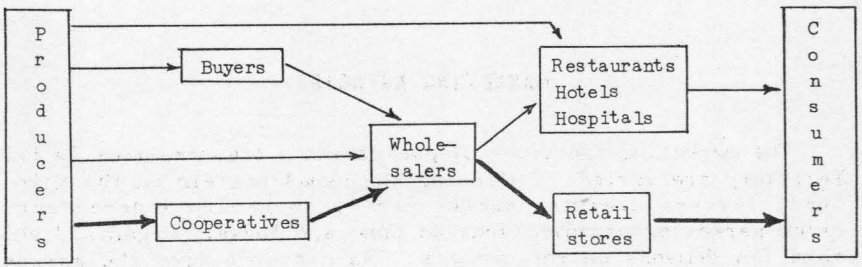
Most of the outer-island eggs sold in Honolulu are handled by four wholesalers on consignment. In many cases, the shippers candle and grade the sized eggs before shipping in 30-dozen cases with flats and fillers. Wholesalers are responsible for the marketing of eggs in Honolulu, and their services often

[6]Under 15 ounces per dozen.

include candling, certifying, and cartoning. Other shippers send their eggs packed in 1-dozen cartons in cases, and the wholesaler merely distributes them to retail stores. Wholesaler charges for these services range from 6 to 10 cents per dozen, depending upon the services performed.

Before World War II, the average quality of outer-island eggs sold in Honolulu was often considerably below the quality of Oahu eggs. The method of assembly was inefficient, and transportation facilities were poorer than at present. Before World War II, Oahu eggs commanded a premium of 5 to 7 cents per dozen over outer-island eggs. Since 1945, the quality of outer-island eggs has been comparable to Oahu eggs as a result of more efficient assembly methods and improved transportation facilities, and the price differential has largely disappeared. Returns to outer-island farmers are less than to Oahu poultrymen, however, because of freight and commission charges. Channels of distribution for outer-island eggs are shown in Chart 7.

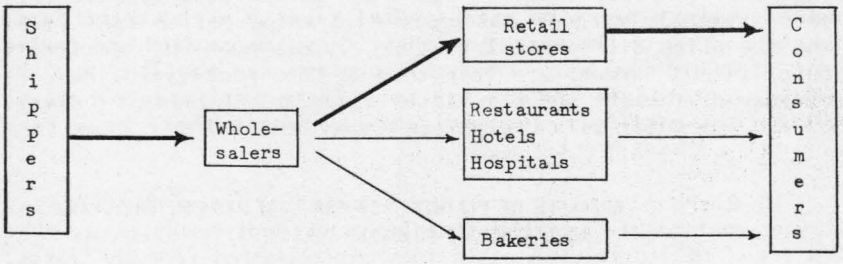
Chart 7. CHANNELS OF DISTRIBUTION FOR EGGS FROM OUTER ISLAND POULTRYMEN TO HONOLULU CONSUMERS.



Mainland eggs are handled in Honolulu by seven wholesalers, three of whom are representatives of large mainland wholesale firms. Eggs are usually shipped in 30-dozen cases packed with flats and fillers. Most wholesalers re-candle and pack them in 1-dozen cartons which are marketed under the trade name of the firm (Chart 8). Recently, a few wholesalers have had the eggs graded and cartoned on the Mainland. By this procedure, they are ready for distribution to retail stores as soon as they are unloaded in Honolulu.

A survey of Honolulu retail stores revealed that 74 percent of the mainland eggs were medium size, 22 percent large, and 4 percent small. All eggs were labeled Grade A. Honolulu dealers prefer to handle medium-size mainland eggs because they compete more favorably with island eggs. A common practice among Honolulu retailers is to use Grade A, medium-size mainland eggs as price leaders, displaying them prominently in the store and pricing them considerably below island eggs of comparable size.

Chart 8. CHANNELS OF DISTRIBUTION FOR MAINLAND EGGS FROM MAINLAND SHIPPERS TO HONOLULU CONSUMERS.



MARKETING AGENCIES

The marketing functions of poultrymen's organizations in the Territory are varied. Following the usual pattern on the Mainland, farmers near the market prefer to remain independent; hence marketing organizations on Oahu are loosely organized and make few demands on the members. As distance from the market increases, the marketing process becomes more complex, and farmers group together to market their products more effectively.

There are two organizations for poultrymen on Oahu, and the combined membership of the organizations include approximately one half of the commercial poultrymen. The larger of the two, including approximately 40 percent of the producers on Oahu in 1950, has no facilities for candling, grading, and storing, so eggs are seldom handled except during the spring. Each member markets his own eggs as he chooses and turns to the organization for aid in finding outlets when he has a surplus he cannot dispose of through his own efforts. The principal function of the organization is to attempt to maintain a uniform price for farmers selling to retailers and to consumers who buy at the

farms. In this they are fairly successful. Prices are published weekly in newspapers by the organization, and members are able to demand the quoted price. The quoted prices are usually top prices during periods of short supply, but, during the spring, the quoted prices may be higher than the average prevailing price because non-member farmers tend to sell at reduced prices to dispose of their surplus.

The second organization had a membership of 23 poultry farmers, or approximately 12 percent of the commercial poultrymen on Oahu in 1950. Several attempts to convert this organization into a cooperative have been unsuccessful, and at the present time it functions as a wholesaler. A truck route is operated which picks up eggs several times a week at the farms and hauls them to the warehouse where they are candled and packed into standard cartons. Feed and supplies are handled, and the monthly returns to farmers are usually the difference between their feed costs and the wholesale value of their eggs less marketing charges.

This organization provides limited storage facilities. During most of the year no storage is needed, because eggs are delivered to stores soon after they are collected from the farms. Two reefer boxes are used for holding the eggs from the time they are brought in until they are sold. During the spring, a few cases of surplus eggs are shell treated and held in the reefer boxes until they can be sold at higher prices. Farmers are charged 1 cent per dozen for shell treating and 20 cents per case per month (0.7 cent per dozen per month) for storage. The shell treated eggs are sold at prices lower than untreated island eggs but above prices of mainland eggs.

Most of the Maui eggs sold in Honolulu are sent by individual farmers to wholesalers of their choosing, and a few are sent in cartons directly to retail stores. Some are shipped by a poultry club. This club has about 14 members--about 37 percent of the poultry farmers on the island--who ship their eggs together. Although the club members ship simultaneously to take advantage of the lower freight rate, each farmer candles, grades, and ships his own eggs, and payments are made directly to each farmer by the wholesaler who receives them.

Members of this club send practically all of their production to Honolulu. Freight charges range from 40 to 61 cents per case (1.3 to 2.0 cents per dozen) depending upon the number of cases sent each time. The farmer receives the Honolulu wholesale price minus freight and commission. The usual commission charged is 6 cents per dozen. Thus, if the Honolulu wholesale price is 60 cents for large Grade A eggs, the farmer realizes

approximately 52 cents per dozen. The wholesaler who handles these eggs sells them as he receives them in cartons from the producer. His services do not include candling, grading, and cartoning.

The majority of the poultry farmers in the Hilo area of Hawaii belong to a cooperative. This organization was begun in 1940 as a club, was incorporated in 1941 and, early in 1949, with the revision of the Territorial Cooperative Law, became a cooperative. The membership includes about 60 percent of all the commercial producers on the island, and about 75 percent of the eggs produced on Hawaii are handled by this organization.

Most members bring their cleaned and sized eggs to the assembly plant of the cooperative two or three times a week where they are candled and graded. Those to be sold in Hilo are put in standard cartons; those to be shipped are packed with flats and fillers in 30-dozen cases. After candling and grading, the eggs are put in a reefer box where they are held usually 2 or 3 days at a temperature of 38° F., until sold in Hilo or sent to Honolulu. The reefer box has a capacity of 200 cases of eggs. For these services, members are charged at a flat rate per dozen. Freight and commission on eggs are charged against the account of each member.

The eggs of the cooperative are handled in Honolulu, on consignment, by one of the large wholesalers. Services performed by the wholesaler include receiving the eggs at the dock, transporting them to the candling plant, candling, packing in cartons, and distributing them to retail stores in cartons marked with the brand of the wholesale firm. During the spring, eggs may be held in storage for short periods.

Three dealers assemble eggs by means of truck routes to the poultry farms near Hilo. Various degrees of marketing services are performed, but usually medium and large eggs are shipped to wholesalers in Honolulu, in cases with flats and fillers, without further candling or grading. Two or three producers ship surplus eggs to Honolulu wholesalers. These eggs are shipped on consignment to wholesalers who candle and package the eggs for distribution to retailers. All shippers pay freight and commission costs plus excessive losses from cull or low-quality eggs.

Individual poultrymen on Kauai ship eggs to wholesalers in Honolulu, in cartons or with flats and fillers in 30-dozen cases. A cooperative organization of poultrymen ships graded and candled eggs in cartons to wholesalers for distribution to retail stores. Many shippers perform the services of grading, candling, and packing in cartons in addition to paying freight and commission charges.

QUALITY

The quality of eggs sold in Honolulu retail stores is good, due primarily to the enforcement of the Egg Law by the Division of Marketing, Territorial Board of Agriculture and Forestry. Briefly, the Egg Law is a labeling law. It requires that eggs sold at retail be labeled with the size, grade, and origin. Eggs that have been shell treated must be labeled "Processed" or "Shell Protected." Consumer grades for eggs are AA, A, B, and C, and specifications are the same as Federal specifications. Only Grade A eggs, which includes Grade AA, may be labeled fresh. Eggs produced outside the Territory must be stamped with the initials of the country of origin. Regulation 3, Section 3, of the Egg Law states that consumer Grade A "shall consist of eggs of which at least 80 percent are Grade A or better and the balance are Grade B, except for a permitted tolerance of 18 eggs per 30 dozen that may be of the quality of Grade C, light dirty or check or better and of which not more than three eggs (.8%) may contain small meat spots or blood clots."

Eggs at retail stores are inspected monthly by inspectors of the Division of Marketing. To facilitate the procedure, the Territory is divided into 16 districts which are inspected in rotation. The procedure varies, however, when a high percentage of labeling violations occurs in certain districts. These districts are inspected more often than those where few violations are found. The number of stores inspected varies with the season of the year. More inspections are made from February to August, when more island eggs are available for sale, and eggs remain longer in some retail stores without benefit of refrigeration.

To determine the average quality of eggs sold in Honolulu retail grocery stores, arrangements were made with the Division of Marketing to candle eggs periodically in selected stores throughout the city. For the purpose of these controlled checks, 36 stores were selected from the membership list of the Oahu Retail Food Dealers' Association. In each store, 100 eggs of each type offered for sale were candled. In June 1950, 80 lots of 100 eggs each were candled in 36 stores. In November, 89 lots of 100 eggs were candled. In April, 1951, eggs were candled from 83 lots of Oahu, outer-island, and mainland eggs. All eggs inspected were large, medium, or small Grade A. The detailed results of the three surveys are shown in Tables E-1, E-2, and E-3 in the Appendix.

During the June survey, it was noted that only 2 percent of the Oahu eggs inspected were displayed under refrigeration.

Nine percent of the outer-island eggs and 44 percent of the mainland eggs were displayed in refrigerated boxes. In November, approximately 10 percent of Oahu, 12 percent of the outer-island, and 46 percent of the mainland eggs were displayed in refrigerated boxes. In April, 1951, about one tenth of Oahu eggs, one fourth of outer-island, and one half of the mainland eggs were refrigerated. Since the stores were the same in these surveys, there was a slight increase in the use of refrigeration.

Because of nearness to market, the quality of Oahu eggs should be higher than was indicated in these surveys, in which the large and medium sizes averaged about 90 percent Grade A quality. Eggs from the outer islands were of still lower quality at 87 percent Grade A, whereas the samples of mainland eggs averaged only 82 percent Grade A quality. In most cases the eggs had deteriorated to Grade B quality, with a few at Grade C, but too high a proportion were graded down because of dirty and checked shells. These defects plus blood or meat spots can be traced to careless candling and handling.

In Table 3, a summary of inspections is given on the basis of lots of 100 eggs which were inspected. More than one half of the samples of Oahu eggs were out-of-grade because of over-tolerance on grade factors. A strict interpretation of the grade standards, whereby one percent blood or meat spot was over-tolerance, accounted for one half of these out-of-grade lots. One egg in the sample lot of 100 eggs would cause the entire lot to be graded down to Grade B. In these inspections, eggs from Oahu also showed a high rate of over-tolerance for checked and dirty shells.

Outer-island and Mainland eggs were usually candled and graded by experienced workers in assembly plants or wholesale establishments. The inspections revealed a lower percentage of out-of-grade lots for outer-island and mainland eggs (40 and 32, respectively) than for Oahu eggs (55).

The results of these surveys indicate that Oahu farmers are not taking advantage of their proximity to Honolulu to market eggs of superior quality. The quality of Oahu eggs sold in retail stores could be improved by more careful candling and grading at the farms, by more careful handling, and by the use of refrigeration for eggs at the farm and at the retail level.

Table 3. SUMMARY OF INSPECTIONS OF GRADE A SHELL EGGS OFFERED FOR SALE IN 36 RETAIL GROCERIES IN HONOLULU.

Origin of eggs	Number of lots inspected	Number out of grade	B & C grade	Number of lots over tolerance			
				Check-dirty	Blood spots	Leaker-loss	Under-size
Period: June 13 - 15, 1950							
Oahu	42	25	3	4	13	4	1
Outer Is.	11	5	0	0	4	0	1
Mainland	27	10	4	1	1	4	0
All	80	40	7	5	18	8	2
Period: November 13 - 15, 1950							
Oahu	42	22	1	0	21	0	0
Outer Is.	17	7	2	1	4	0	0
Mainland	30	5	2	0	1	2	0
All	89	34	5	1	26	2	0
Period: April 2 - 4, 1951							
Oahu	43	24	5	6	9	2	2
Outer Is.	12	4	1	-	3	0	-
Mainland	28	12	3	3	4	2	-
All	83	40	9	9	16	4	2

APPENDIX

Table A. ESTIMATED SUPPLY OF EGGS ON OAHU AND PER CAPITA CIVILIAN DISAPPEARANCE ON OAHU AND THE U.S. MAINLAND, 1939-50.

Year	Annual unloads from all sources[1]	Oahu production[2]	Total Oahu supplies	Total supplies for Oahu civilians[3]	Civilian population of Oahu[4]	Per capita disappearance, Oahu[5]	Per capita disappearance, U.S.[6]
	1,000 dozen	1,000 dozen	1,000 dozen	1,000 dozen	Number	Number	Number
1939	2,843	1,093	3,936	2,736	228,586	144	311
1940	3,054	1,366	4,420	3,120	260,885	143	317
1941	4,782	1,530	6,312	4,312	310,503	167	311
1942	3,972[7]	1,000	4,972	4,972	321,037	186	316
1943	3,790	1,500	5,290	5,290	332,571	191	346
1944	4,468	2,200	6,668	6,668	342,106	234	350
1945	5,210	1,950	7,160	7,160	348,045	247	397
1946	3,559[8]	1,332	4,891[9]	4,891	358,910	164	374
1947	2,977	1,402	4,379	4,379	360,274	146	379
1948	2,557[10]	1,922	4,479	4,479	371,649	145	386
1949	2,888	1,967	4,855	4,855	360,085	162	374
1950	2,529	2,297	4,826	4,826	320,732[12]	180	390

[1]Unload records, Hawaii Univ. Agr. Ext. Serv.

[2]Census report, 1940; Statistics of Diversified Agriculture in Hawaii, Hawaii Univ. Agr. Ext. Serv.

[3]Total unloads and Oahu production less estimated deliveries to military and naval agencies, 1939-41.

[4]July 1 civilian population estimates of City and County of Honolulu, from Bureau of Health Statistics, Territorial Board of Health.

[5]Civilian supplies divided by civilian population of the City and County of Honolulu (Oahu).

[6]Reports, Bureau of Agricultural Economics, U.S. Dept. Agr.

[7]Some 1942 receipts stored for emergency purposes.

[8]Shipping from Mainland interrupted approximately 3 months by strikes.

[9]Includes 5,000 cases released to civilian buyers by military agencies.

[10]Shipping from Mainland interrupted approximately 94 days by strikes.

[11]Shipping from Mainland interrupted approximately 176 days by strikes.

[12]Estimate based on preliminary U.S. Census figures for April 1, 1950, minus members of the Armed Forces, and adjusted for births, deaths, and migration.

Table B. SUPPLY, BY ORIGIN, OF EGGS IN HONOLULU, 1939-50.*

Year	From the Mainland		From outer islands		From foreign countries		From Oahu		Total Supply
	1,000 doz.	Per-cent[1]	1,000 doz.	Per-cent[1]	1,000 doz.	Per-cent[1]	1,000 doz.	Per-cent[1]	1,000 doz.
1939	1,166	43	440	16	37	1	1,093	40	2,736
1940	1,179	38	563	18	12	4	1,366	44	3,120
1941	2,150	50	632	15	–	–	1,530	35	4,312
1942	3,972[2]	80	3	–	–	–	1,000	20	4,972
1943	3,790[2]	72	3	–	–	–	1,500	28	5,290
1944	4,468[2]	67	3	–	–	–	2,200	33	6,668
1945	5,211[2]	73	3	–	–	–	1,950	27	7,161
1946	3,383	69	177	4	–	–	1,332	27	4,892
1947	2,409	55	567	13	–	–	1,402	32	3,378
1948	1,632	36	743	17	183	4	1,922	43	4,480
1949	2,219	46	542	11	127	3	1,967	40	4,855
1950	1,869	39	660	14	–	–	2,282	47	4,811

*Source: *Egg Markets and Prices for Hawaiian Poultrymen*, Hawaii Univ. Agr. Ext. Cir. 214, Jan. 1947.

Statistics of Diversified Agriculture, Hawaii Univ. Agr. Ext. Cir. (annual); Agr. Econ. Rpt. 1 and 7.

Market Statistics, Hawaii Univ. Agr. Ext. Cir. (annual).

[1]Percentage of total supply.
[2]Includes eggs from all sources.
[3]Included in mainland unloads.
[4]Less than 1 percent.

Table C. NUMBER OF COMMERCIAL POULTRY FARMS AND VOLUME OF EGG PRODUCTION, THREE PRINCIPAL EGG-PRODUCING ISLANDS, TERRITORY OF HAWAII, WITH COMPARISONS BETWEEN 1950 AND 1947.*

Island	Number of farms producing eggs		Average number of layers on farms		Annual rate of lay per layer		Eggs produced (1,000 dozen)		Percentage of total territorial egg production	
	1950	1947	1950	1947	1950	1947	1950	1947	1950	1947
Oahu	196	328	178,800	154,100	155	116	2,297	1,481	62	55
Hawaii	166	265	54,300	64,700	162	133	730	685	20	25
Maui	40	48	33,900	34,600	181	154	512	440	14	16
Total	402	641	267,000	253,400	160	124	3,539	2,606	96	96

*Source: *Statistics of Diversified Agriculture*, Hawaii Univ. Agr. Ext. Cir. 241, 1947; Agr. Econ. Rpt. 7, 1951.

Table D-1. MONTHLY AVERAGE HONOLULU WHOLESALE PRICES FOR LARGE GRADE A ISLAND EGGS, 1946-50.*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Annual Average
						Dollars per dozen							
1946	.78	.78	.78	.78	.78	.78	.89	1.23	1.23	1.23	1.23	1.23	.98
1947	1.23	.97	.90	.90	.98	1.00	1.10	1.18	1.27	1.27	1.27	1.27	1.11
1948	1.11	.81	.78	.80	.85	.90	1.03	1.12	1.12	1.19	1.22	1.22	1.01
1949	1.22	1.17	.87	.89	.90	1.04	1.05	1.08	1.09	1.11	1.11	1.14	1.04
4-year average	1.08	.93	.83	.84	.88	.93	1.02	1.14	1.18	1.20	1.21	1.19	1.04
1950	.89	.83	.64	.67	.68	.67	.71	.82	.85	.85	.85	.89	.78

Table D-2. MONTHLY AVERAGE HONOLULU WHOLESALE PRICES FOR LARGE GRADE A MAINLAND EGGS, 1946-50.*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Annual Average
						Dollars per dozen							
1946	.69	.63	.59	.57	.56	.54	.56	.64	.69	-	.80	.82	.64
1947	.80	.66	.61	.60	.66	.70	.73	.80	.85	.86	.84	.82	.74
1948	.79	.67	.64	.65	.67	.67	.73	.81	.84	.93	-	.85	.75
1949	.82	.72	.66	.64	.65	1.15	.79	.81	.92**	.90	.74	.67	.79
4-year average	.78	.67	.62	.61	.66	.72	.70	.76	.82	.89	.79	.78	.73
1950	.62	.57	.56	.56	.56	.56	.62	.68	.69	.70	.71	.85	.64

**Canadian eggs.

Table D-3. MONTHLY AVERAGE WHOLESALE PRICES OF LARGE GRADE A EGGS IN SAN FRANCISCO, 1946-50.*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Annual Average
						Dollars per dozen							
1946	.48	.41	.41	.41	.41	.43	.47	.53	.60	.63	.64	.65	.50
1947	.56	.44	.47	.51	.55	.55	.65	.64	.71	.69	.66	.67	.59
1948	.58	.51	.53	.54	.54	.54	.60	.66	.67	.68	.71	.70	.60
1949	.63	.51	.47	.49	.51	.52	.58	.61	.66	.65	.59	.46	.56
4-year average	.56	.47	.47	.49	.50	.51	.57	.61	.66	.66	.65	.62	.56
1950	.41	.38	.38	.38	.38	.39	.45	.50	.53	.55	.62	.68	.47

*Source: *Market Statistics*, Hawaii Univ. Agr. Ext. Cir. (annual).

Table E-1. QUALITY OF EGGS DISPLAYED FOR SALE IN 36 RETAIL STORES IN HONOLULU, JUNE 13-15, 1950.

Origin, grade, and size	No. of eggs inspected	Grade A		Grade B		Grade C		Light dirty and check		Meat or blood spots		Leaker and loss	
	No.	No.	Percent[1]	No.	Percent[1]	No.	Percent[1]	No.	Percent[1]	No.	Percent[1]	No.	Percent[1]
Oahu													
Grade A Large	2,300	2,023	88	178	8	32	1	48	2	16	1	3	[2]
Grade A Medium	1,600	1,434	90	94	6	23	1	41	3	7	[2]	1	[2]
Grade A Small	300	284	95	7	2	-	-	6	2	3	1	-	-
Total Oahu	4,200	3,741	89	279	7	55	1	95	2	26	1	4	[2]
Outer Island													
Grade A Large	300	264	88	28	9	3	1	4	1	1	[2]	-	-
Grade A Medium	600	543	91	39	7	5	[2]	9	1	4	[2]	-	-
Grade A Small	200	188	94	7	4	-	-	3	1	2	[2]	-	-
Total Outer Is.	1,100	995	90	74	7	8	1	16	2	7	[2]	-	-
Mainland													
Grade A Large	600	505	84	60	10	19	3	10	2	4	[2]	2	[2]
Grade A Medium	2,000	1,517	76	318	16	120	6	40	2	1	[2]	4	[2]
Grade A Small	100	83	83	13	13	-	-	4	4	-	-	-	-
Total Mainland	2,700	2,105	78	391	14	139	5	54	2	5	[2]	6	[2]
Total All Eggs	8,000	6,841	86	744	9	202	2	165	2	38	[2]	10	[2]

[1]Percentage of total eggs inspected in each category.

[2]Less than 1 percent.

Table E-2. QUALITY OF EGGS DISPLAYED FOR SALE IN 36 RETAIL STORES IN HONOLULU, NOVEMBER 13-15, 1950.

Origin, size, and grade	No. of eggs inspected	Grade A		Grade B		Grade C		Light dirty and check		Meat or blood spots		Leaker and loss	
	No.	No.	Percent[1]	No.	Percent[1]	No.	Percent[1]	No.	Percent[1]	No.	Percent[1]	No.	Percent[1]
Oahu													
Grade A Large	2,400	2,219	92	117	5	6	2	42	2	15	1	1	2
Grade A Medium	1,400	1,286	92	79	6	3	2	26	2	6	2	–	–
Grade A Small	400	373	93	16	4	1	2	8	2	2	1	–	–
Total Oahu	4,200	3,878	92	212	5	10	2	76	2	23	1	1	2
Outer Island													
Grade A Large	800	673	84	101	13	8	1	17	2	1	2	–	–
Grade A Medium	700	586	84	90	13	11	1	11	1	2	2	–	–
Grade A Small	200	179	90	17	8	–	–	3	2	1	2	–	–
Total Outer Is.	1,700	1,438	85	208	12	19	1	31	2	4	2	–	–
Mainland													
Grade A Large	1,200	1,007	84	157	13	9	1	24	2	–	–	3	2
Grade A Medium	1,800	1,507	84	261	14	4	2	27	2	1	2	–	–
Total Mainland	3,000	2,514	84	418	14	13	2	51	2	1	2	3	2
Total All Eggs	8,900	7,830	88	838	9	42	2	158	2	28	2	4	2

[1]Percentage of total eggs inspected in each category.

[2]Less than 1 percent.

Table E-3. QUALITY OF EGGS DISPLAYED FOR SALE IN 36 RETAIL STORES IN HONOLULU, APRIL 2-4, 1951.

Origin, size, and grade	*No. of eggs inspected*	*Grade A*		*Grade B*		*Grade C*		*Light dirty and check*		*Meat or blood spots*		*Leaker and loss*	
	No.	*No.*	*Per-cent*[1]	*No.*	*Per-cent*[1]	*No.*	*Per-cent*[1]	*No.*	*Per-cent*[1]	*No.*	*Per-cent*[1]	*No.*	*Per-cent*[1]
Oahu													
Grade A Large	2,800	2,534	91	138	5	9	2	84	3	10	2	3	2
Grade A Medium	1,300	1,140	88	71	6	6	2	45	3	5	2	1	2
Grade A Small	200	183	91	15	8	–	–	2	1	–	–	–	–
Total Oahu	4,300	3,857	90	224	5	15	2	131	3	15	2	4	2
Outer Island													
Grade A Large	900	834	93	49	5	3	2	12	1	2	2	–	–
Grade A Medium	300	247	82	45	15	1	2	5	2	–	–	2	1
Grade A Small	–	–	–	–	–	–	–	–	–	–	–	–	–
Total Outer Is.	1,200	1,081	90	94	8	4	2	17	1	2	2	2	2
Mainland													
Grade A Large	1,400	1,200	86	137	10	12	1	45	3	3	2	2	2
Grade A Medium	1,400	1,175	84	170	12	12	1	40	3	2	2	–	–
Total Mainland	2,800	2,375	85	307	11	24	1	85	3	5	2	2	2
Total All Eggs	8,300	7,313	88	625	8	43	1	233	3	22	2	8	2

[1]Percentage of total eggs inspected in each category.

[2]Less than 1 percent.

Chart A. MONTHLY SUPPLY OF EGGS IN HONOLULU, 1950.

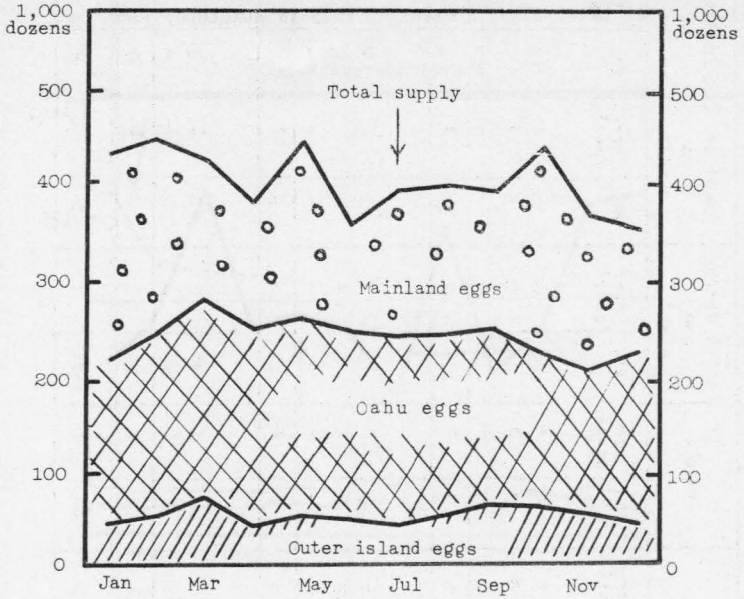


Chart B. MONTHLY PRODUCTION OF OAHU EGGS AND WHOLESALE PRICES FOR LARGE GRADE A OAHU EGGS IN HONOLULU, 1950.

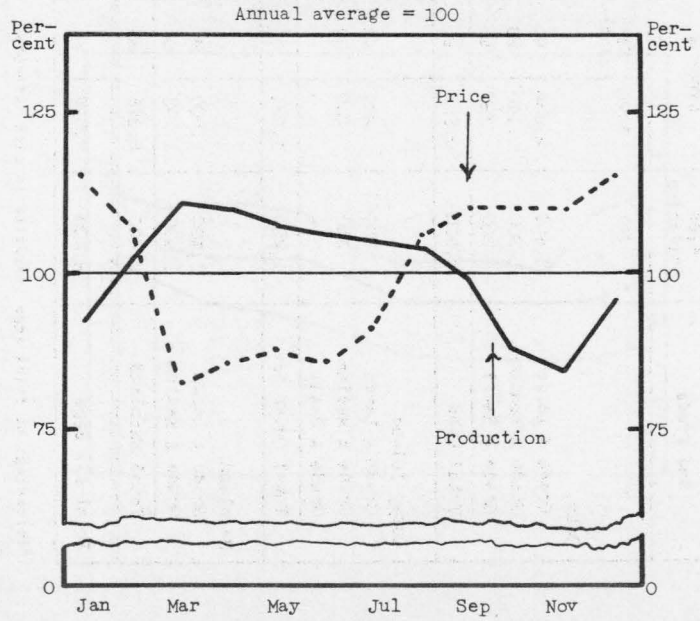


Chart C. MONTHLY UNLOADS OF MAINLAND EGGS AND WHOLESALE PRICES FOR LARGE GRADE A MAINLAND EGGS IN HONOLULU, 1950.

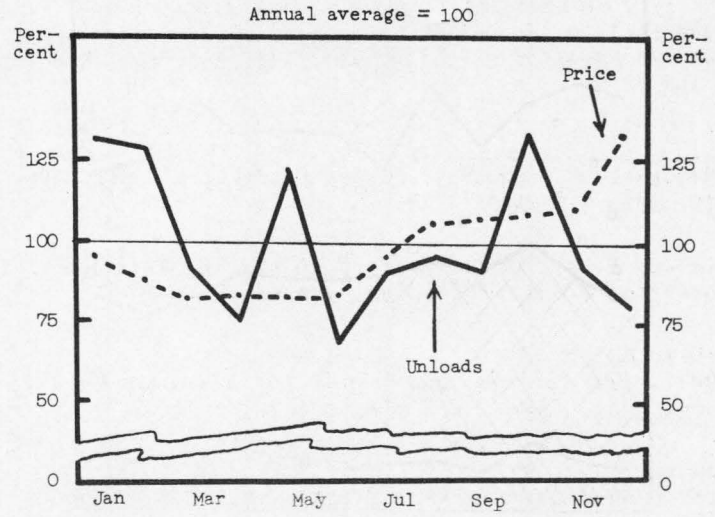
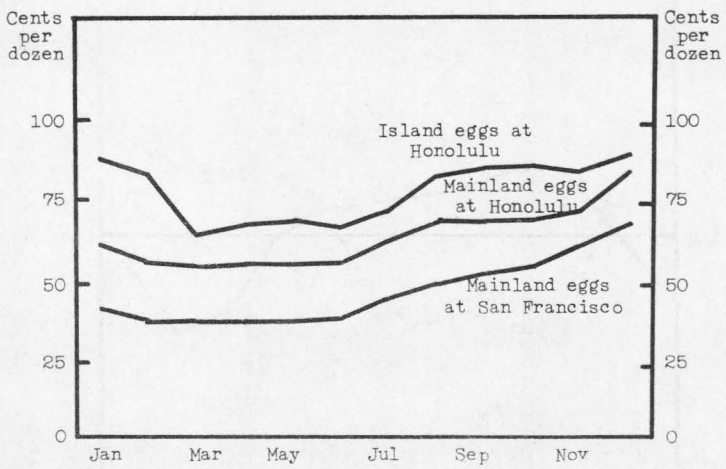


Chart D. MONTHLY WHOLESALE PRICES FOR LARGE GRADE A EGGS IN HONOLULU AND SAN FRANCISCO, 1950.



REFERENCES

1. University of Hawaii Agricultural Extension Service.
   1945 to 1950 (annual). *Statistics of Diversified Agriculture in Hawaii*. Cir. 199, 217, 241, 263; Agr. Econ. Rpts. 1 and 7.

2. _____
   1944 to 1950 (annual). *Market Statistics*. Cir. 176, 186, 215, 237, 277, 303.

3. Benjamin, E. W., Howar Pierce, and Wm. D. Termohlen, 1949. *Marketing Poultry Products*, 4th ed.

4. Elliott, Ralph.
   1947. *Egg Markets and Prices for Hawaiian Poultrymen*. Hawaii Univ. Agr. Ext. Cir. 214.

5. Kinghorne, Jos. Wm.
   1947 (revised). *Marketing Eggs*. U.S.D.A. Farmers' Bul. 1378.